

What is claimed is:

1. A fluid composition for a refrigerator, which comprises a chlorine-free fluorocarbon refrigerant and a refrigerator oil, said refrigerator oil consisting essentially of a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid, said refrigerator oil exhibiting a pour point not higher than -10°C .

2. The fluid composition according to claim 1 wherein said refrigerator oil has a pour point of -20°C to -80°C .

3. The fluid composition according to claim 1 wherein said 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid are in a molar ratio of 1:1.

4. The fluid composition according to claim 1 which additionally contains 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, alkyloxirane compounds, alkyloxirane compounds,

alicyclic epoxy compounds and epoxidized fatty acid monoesters.

5. The fluid composition according to claim 1 which additionally contains at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters.

6. The fluid composition according to claim 1 which additionally contains at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators.

7. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil being a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid, said refrigerator oil exhibiting a pour point not higher than -10°C .

8. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil
5 consisting of a tetraester of pentaerythritol of formula (1)



10 with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; and 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds,
15 alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, allyloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters and said refrigerator oil exhibiting a pour point not higher than -10°C .

20 9. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of as a major component a tetraester of
25 pentaerythritol of formula (1)



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with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; and at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes and said refrigerator oil exhibiting a pour point not higher than -10°C.

10. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; and 0.1-5.0 % by weight based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters and said refrigerator oil exhibiting a pour point not higher than -10°C.

11. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said

refrigerant of a refrigerator oil, said refrigerator oil consisting of a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators and said refrigerator oil exhibiting a pour point not higher than -10°C .

12. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of as a major component a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes; and 0.1-5% by weight

based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, ^rallyloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters and said refrigerator oil exhibiting a pour point not higher than -10°C.

13. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil being a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, ^rallyloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters; and 0.1-5.0 % by weight

based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters and said refrigerator oil exhibiting a pour point not higher than -10°C.

14. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil being a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; 0.1-5.0 % by weight based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming

agents and metal inactivators and said refrigerator oil exhibiting a pour point not higher than -10°C .

15. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of as a major component a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes; and 0.1-5.0 % by weight based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters and said refrigerator oil exhibiting a pour point not higher than -10°C .

16. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said

refrigerant of a refrigerator oil, said refrigerator oil being a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, ~~ally~~oxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators and said refrigerator oil exhibiting a pour point not higher than -10°C .

17. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of as a major component a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators and said refrigerator oil exhibiting a pour point not higher than -10°C .

18. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of as a major component a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes; 0.1-5% by weight

based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, ~~ally~~oxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters; and 0.1-5.0 % by weight based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters and said refrigerator oil exhibiting a pour point not higher than -10°C.

19. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, polyα-olefins and alkylbenzenes; 0.1-5.0 % by weight

based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated

5 phosphoric esters, and phosphorous esters; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators and
10 said refrigerator oil exhibiting a pour point not higher than -10°C .

20. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said
15 refrigerant of a refrigerator oil, said refrigerator oil consisting of a tetraester of pentaerythritol of formula (1)



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with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting
25 of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, allyloxirane compounds,

alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters; 0.1-5.0 % by weight based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators and said refrigerator oil exhibiting a pour point not higher than -10°C.

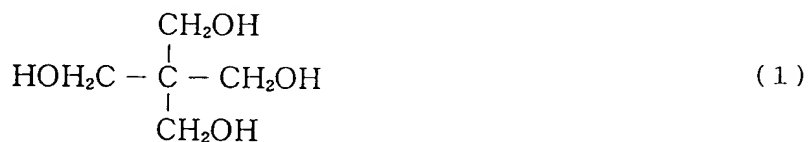
21. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of as a major component a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, polyα-olefins and alkylbenzenes; 0.1-5% by weight

based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, allyloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators and said refrigerator oil exhibiting a pour point not higher than -10°C .

22. A fluid composition for a refrigerator, which consists of a chlorine-free fluorocarbon refrigerant and 1-500 parts by weight based on 100 parts by weight of said refrigerant of a refrigerator oil, said refrigerator oil consisting of as a major component a tetraester of pentaerythritol of formula (1)



with both 2-ethylhexanoic acid and 3,5,5-trimethylhexanoic acid; at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes; 0.1-5 % by weight

based on the total amount of said refrigerator oil of at least one epoxy compound, said epoxy compound being a member selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, allyloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters; 0.1-5.0 % by weight based on the total amount of said refrigerator oil of at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters; and not more than 10% by weight of at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators and said refrigerator oil exhibiting a pour point not higher than -10°C .

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